

## ABSTRACT

A combiner for a diversity radio receiver wherein amplitude inversion of either received signal is performed, on a selection basis, in order to maximize the resultant output combined signal. The strength of each diversity signal is monitored as well as the strength of the combined output signal. A gain control engine combines the stronger signal with either the inverted or non-inverted weaker signal to maximize the combined output (resultant) signal strength. According to another embodiment the combiner may additionally perform an amplitude adjustment whereby the in-channel noise power is also monitored and the individual channel signal-to-noise ratios are used to adjust the amplifier gains. In this embodiment the individual channel signal-to-noise ratios plus the strength of the combined output signal are used to decide whether to invert the weaker signal before combining the received signals.